



## Discuss the management of the oral biofilm in paediatric dental patients

Louise Brearley Messer ANZSPD Post-graduate Essay Competition, 2014

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### Introduction

Oral biofilms are complex three-dimensional organized bacterial communities that can colonize tooth surfaces, the oral mucosa and the tongue.<sup>1</sup> Living in a biofilm community provides many advantages for microorganisms. It broadens their habitat range, improves metabolism, increases tolerance to antimicrobial agents and host defence mechanisms, and enhances bacterial virulence, thereby serving as a model system for bacterial adhesion<sup>2</sup> and antibiotic resistance.<sup>3</sup> The resident oral microbiota provides many benefits to the paediatric dental patient, including preventing colonization by potentially pathogenic exogenous microorganisms and contributing to host physiology. However, at the same time, there is a strong positive correlation between the presence of dental plaque and both caries and gingivitis.<sup>4,5</sup> As such, managing the oral biofilm in the growing patient can pose a challenge to the clinician.

### Development of the oral biofilm

Colonization of the oral cavity begins during the passage of the newborn through the birth canal.<sup>6,7</sup> The tongue and soft tissues act as a reservoir for microbial pathogens and require attention in therapeutic and preventive interventions. It is noteworthy that the furrows of the tongue appear to be an

important ecological niche.<sup>8</sup> With the eruption of the teeth, a major ecological differentiation of the microbiota occurs, leading to the formation of the dental plaque biofilm.<sup>9</sup>

Initial plaque formation starts with the deposition of a salivary pellicle on the tooth surface. Planktonic cells or aggregates of cells adhere to this pellicle resulting in a scattered pattern of bacterial deposits<sup>10</sup> composed of initial colonizers such as *Actinomyces sp.*, *Streptococcus sp.*, *Lactobacillus sp.* and *Candida sp.*<sup>11, 12</sup> Maturation of the biofilm proceeds via co-aggregation of planktonic bacteria to the already adhered biofilm and bacterial growth.<sup>13</sup>

As the biofilm begins to mature undisturbed, there is a progressive shift from a gram-positive, aerobic flora to one predominated by gram-negative, anaerobic species. Differences in the profile between age groups suggest a gradual maturation of the oral microbiota as the child host grows older, but total proportions of the pathogenic species remain low. These findings would suggest that children from the age of three years already have a well-developed oral biofilm.<sup>14</sup>

### Benefits of the oral biofilm

The oral biofilm benefits the host in several ways. The normal microflora provide effective competition for nutrients and attachment sites, the production

## THIS ISSUE

Discuss the management of the oral biofilm in paediatric dental patients	1-6
Federal President's Report	7-8
18th Biennial ANZSPD Congress Progress Report	9
Photos from the 2014 RK Hall Lecture Series	10-11
There is an emerging trend on the use of probiotics and organic diets. Discuss the effects of these supplements and diets on the oral environment of a child.	12-15
New Zealand Branch Report	16
New South Wales Branch Report	17
Queensland Branch Report	17
Colgate Corner	19
Up Coming Events	20

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of inhibitory factors, and creation of unfavourable growth conditions for invading species dubbed “colonization resistance”.<sup>15</sup> The enamel pellicle provides a lubricating layer to allow for efficient mastication as well as protection from demineralization and a means for post eruption maturation of enamel.<sup>16</sup> Other saliva-acquired components in the pellicle attempt to negate the deleterious by-products of bacterial metabolism in the dental biofilm. Certain bacteria in oral biofilms lessen the effects of cariogenic, acid-producing bacteria. For example, *Veillonella* metabolizes lactic acid produced by acidogenic bacteria. *Streptococcus salivarius* and *Streptococcus sanguinis* produce arginine deaminase and urease that create urea and ammonia compounds, which raise the pH.<sup>17</sup>

The enamel of newly erupted teeth is permeable to soluble fluids. As mentioned previously, the newly erupted tooth is covered rapidly by acquired enamel pellicle. Fortunately, saliva is supersaturated with calcium and phosphate, and fluoride is preferentially sequestered by pellicle and plaque. In this environment, the enamel undergoes post eruption maturation via the replacement of more acid-soluble hydroxyapatite with more acid-resistant and fluoridated hydroxyapatite.<sup>18</sup>

When considering the management of the oral biofilm it is important to consider the important role the oral biofilm plays in health. As such, maintenance of a health-related oral microbiota is essential. Preventive efforts must focus on preventing changes in the parameters responsible for the overgrowth of pathogenic bacteria, including oral hygiene, diet and host-related factors.

## Oral disease and the biofilm

### Gingivitis

Marginal gingivitis is the most common form of periodontal disease and starts in early childhood.<sup>19</sup> It occurs as a direct response to bacteria in the plaque.<sup>20</sup> *Porphyromonas gingivalis*, *Actinobacillus actinomycetemcomitans*, and *Tannerella* have been implicated as the main aetiological agents of periodontal disease and have all been detected in the dental plaque of healthy children and of those with gingivitis.<sup>21</sup>

The severity and prevalence of gingivitis increases with age.<sup>22</sup> It has been suggested that age-related differences in gingival inflammation may simply reflect

differences in the amount of plaque, caused for example by age-related variations in oral hygiene habits; however, it is also well established that a reduction of plaque biofilm results in a comparable reduction in gingival inflammation.<sup>23</sup>

Inorganic components in saliva, largely calcium and phosphorus, facilitate the development of calculus through calcification of dental plaque. The practical consequences of calculus formation are that the deposit is significantly more difficult to remove once calcified, and leaves a rough surface on the root which is easily colonized by plaque.

### Dental caries

Dental caries is a multifactorial disease that involves the participation of cariogenic and non-cariogenic bacteria, salivary components (proteins, enzymes, calcium, phosphate, fluoride) and dietary sources of fermentable carbohydrates (sucrose, glucose) combined with sufficient time for the preceding factors to interact. The process of dental caries formation begins when dietary fermentable carbohydrates are made available to acidogenic bacteria in the biofilm.<sup>18</sup> The pH rapidly decreases from a resting pH of 7.0 to a pH of less than 5.0 within the biofilm fluid and along the interface between the biofilm and enamel surface until the critical pH at which enamel undergoes dissolution is reached (approximately pH 5.5).

Early acquisition of *Streptococcus mutans* in the oral biofilm is a major risk factor for early childhood caries and predicts future caries experience.<sup>24</sup> This cariogenic organism is acquired early in life and has been shown to colonize prenatate infants.<sup>25</sup> This time-frame is well before the “window of infectivity”.<sup>26</sup>

### The theories

Management of the oral biofilm has changed throughout the years, centred largely on the accepted aetiological theory at the time. The “Non-specific plaque hypothesis” proposed that dental caries was caused by multiple species of oral bacteria but no specific bacteria were implicated, hence the term “non-specific”.<sup>27</sup> Based on this theory, prevention of oral disease was centred around removing or minimizing multiple bacterial species via the practice of regular tooth brushing, flossing and professional tooth cleaning.

In the mid-20th century, as microscopy, isolation and identification techniques advanced, the nonspecific plaque hypothesis was abandoned. The “Specific

plaque hypothesis” introduced by Walter J. Loesche in 1979 was backed by research which demonstrated transmissible *Streptococcus mutans* to be solely responsible for at least one type of tooth decay in hamsters.<sup>28</sup> Management at this time centred on eliminating these microbes with the aid of antimicrobial agents.

The “Ecological plaque hypothesis” combines the key points from both previous theories.<sup>29</sup> It suggests that the oral microbiota can change from health-associated to disease-associated in response to host and environmental factors. Consequently, successful treatment of oral biofilm-associated diseases requires that the underlying changes in the environment that drive microbial shifts are addressed.

### Transmission

The term vertical transmission refers to the transmission of microbes from the caregiver to the child. The major reservoir from which infants acquire mutans streptococci (MS) is their mothers saliva.<sup>30</sup> Successful infant colonization of maternally transmitted *Streptococcus mutans* is related to several factors including maternal salivary levels,<sup>31</sup> frequency of small dose inoculations,<sup>32</sup> a minimum infective dose<sup>33</sup> and the mode delivery.<sup>6</sup>

Thus, management of prevention in the child can integrate the parents. This includes suppressing *Streptococcus mutans* reservoirs in mothers by treating active caries and using topical antimicrobial chlorhexidine gels and fluoride preparations<sup>34</sup> to reduce the chance of transmission during the “window of infectivity”. The use of Xylitol chewing gum has also demonstrated a reduction of the probability of vertical transmission of MS at two years of age.<sup>35</sup> The Dental Bureau of the New York State Department of Health has also recommended altering saliva sharing activities such as tasting food before feeding babies and the sharing of toothbrushes by children and parents.

Vertical transmission is not the only vector by which MS are perpetuated in human populations. Horizontal transmission also occurs.<sup>36,37</sup> The use of day-care centres or a nanny may provide another vector for acquisition of these organisms.

It is important to note that MS is not the only pathogenic organism in the mouth. For example in dental caries, organisms such as *Streptococcus sobrinus*, *Lactobacilli* sp., *Porphyromonas gingivalis* and *Tannerella* have



been identified in subjects as young as 18 months of age. Knowledge of the age and possible changes in colonization patterns and composition of the oral microbiota can lead to a better understanding of disease initiation. Furthermore, this knowledge can then be the basis of a primary preventive programme.

#### The importance of dietary factors

Historically, most dietary factors found to be significant in the modification of the oral biofilm are related to the consumption of sugar; the level of influence may be related to the quantity, consistency, frequency or timing of consumption.

While the original claim that “Sucrose is the arch criminal of dental caries”<sup>38</sup> has been softened over the years, it continues to be the most common form of added sugar in the diet. There does not appear to be any difference in the acidogenic potential, or the ability to directly induce in situ enamel demineralization among the common sugars, such as sucrose, maltose, glucose and fructose.<sup>39</sup> Sucrose has been given special importance due to its involvement as the sole substrate in the synthesis of extracellular glucans, which form a major component of the structural matrix of dental plaque.

Cooked starches are also now recognised to be a caries threat, especially because such starches, while not “sticky in the hand”, can be highly retentive in the mouth.<sup>40</sup> Metabolism of starch particles can yield a prolonged acidic challenge, especially at plaque-retentive sites.<sup>41</sup>

While the classical literature continues to inform us, more recent data indicate that recommendations to restrict sugar consumption may no longer be necessary.<sup>42</sup>

#### Fissure sealants

Since bacteria tend to collect in areas of stagnation, it may be advantageous to modify the contours of a tooth so as to remove areas where plaque may be retained. Fissure sealants involve mechanical eradication of pits and fissures of the primary and permanent teeth in order to transform deep, retentive fissures into cleansable ones. Plaque accumulates in these deep difficult-to-clean regions leading to dental caries. There is some evidence on the superiority of pit and fissure sealants over fluoride varnish for the prevention of occlusal caries. However, the current scarcity of data limit recommendations on whether or not to apply pit and fissure sealants, or fluoride varnishes on the occlusal surfaces

of teeth.<sup>43</sup> The use of a fluoride-releasing dental material provides an exogenous source for long-term low fluoride delivery.<sup>44</sup> Typically, these dental materials release a large amount of fluoride while undergoing setting reactions and then release relatively constant low levels of fluoride for prolonged periods thus reducing the incidence of secondary caries formation adjacent to the site.<sup>45</sup>

Enamel hypoplasia has been associated with high counts of MS<sup>46</sup> and may predispose to dental caries when there are cariogenic bacteria along with a high cariogenic diet.<sup>47</sup> Thus a tooth such as this with higher risk of developing pathology may benefit from a fissure sealant or fluoride varnish.

### Mechanical biofilm control

#### Detection

Visual inspection has been the traditional basis of dental plaque detection. The Plaque Index is fundamentally based on distinguishing clearly between the severity and the location of the soft debris that aggregates on a tooth surface by either running a dental probe across the tooth surface or by visual examination with the naked eye. As some patients may improve their oral hygiene just before a dental appointment, the assessment of the gingival condition seems to be a more reliable and valid measure.<sup>48</sup>

A number of staining agents have been developed to make plaque visible to both patients and dentists including a two-tone dye test that provides a “colour guide” as to the age of the plaque.<sup>49</sup> Disclosing wafers used with an instruction programme produce a faster and larger drop in plaque scores when compared with instruction alone, but their introduction as a routine tool for continuous use is viewed with scepticism since the regularity of use gradually declines after the first two weeks.<sup>50</sup>

Confirmation of the presence of MS using a chairside culture system has been recommended for both moderate and high-risk individuals. While the screening tool has been assessed in a small adult population, within a private dental practice setting, and has shown significant predictability, its potential clinical application to school-age children has not been evaluated.<sup>51</sup> *Streptococcus sanguinis* has been reported to be present in relatively high numbers when the numbers of *Streptococcus mutans* are low, suggesting that the presence of high numbers of

*Streptococcus sanguinis* are associated with a low caries risk.<sup>52</sup> Thus, shifts in their relative proportions in the dental biofilm may indicate changes in caries risk.

#### The importance of oral hygiene

Disruption of the oral biofilm by tooth-brushing is the simplest way to reduce the risk of biofilm-dependent diseases. A child’s age is a reasonable predictor of tooth-brushing ability. Effective tooth-brushing is primarily dependent on an individual’s motor skills and motivation and it is often school aged children who have inappropriate oral hygiene levels with high plaque indices.<sup>53</sup> Studies show that forgetfulness to brush the teeth, lack of time, and tooth-brushing frequency are reasons commonly given by children and adolescents to justify poor oral hygiene habits.<sup>54</sup>

Tooth-brushing skills have been shown to be poorer among children aged 6 years and younger, compared with older age groups.<sup>55</sup> It is generally recommended that tooth-brushing should be performed for a minimum of two minutes.

When it comes to removing dental plaque, the most appropriate tooth-brushing technique is the one that provides the most effective way to clean bacterial plaque and debris from the tooth surfaces. One of the most evidence-based manual tooth-brushing methods is the modified Bass method.<sup>56</sup>

The Bass technique, in which the bristles are directed at the gum line at an angle of 45 degrees to the tooth, is widely accepted as being the most effective method of removing plaque adjacent to and immediately beneath the gingival margin, but even with a good brushing technique it is impossible to clean the interdental areas thoroughly.

Since dental floss is able to remove some interproximal plaque it is assumed that frequent regular dental flossing will reduce interproximal caries and periodontal disease risks. Supervised flossing on a daily basis has been found to reduce caries risk by up to 40% in six-year-olds; however, this figure wanes when flossing is not performed daily suggesting that infrequent flossing may be ineffective.<sup>57</sup> However, child patient compliance with daily dental flossing is low.

#### Modulation

The availability of calcium, phosphate and fluoride ions from amorphous calcium phosphate (ACP) has resulted in



it being integrated into topical gels and chewing gums to deliver calcium to dental biofilms and the enamel surface. Calcium, phosphate and fluoride from CPP-ACP are released during acidogenic challenges and help to maintain the supersaturated state of these ions in the biofilm and promote remineralization over demineralization.

Sugar alcohols also have a significant effect on cariogenic bacteria in dental biofilms, are deemed to be noncariogenic and do not promote dental caries. In particular, the use of xylitol has been found to lead to less adherent plaque and a decrease in acid production by the plaque.<sup>58</sup>

### Antimicrobials

Antimicrobial agents may be used to control pathogenic organisms in children: however, the susceptibility of micro-organisms to antimicrobials is considerably reduced in biofilms. Short-term clinical trials have demonstrated that antimicrobials have the potential to inhibit plaque and to prevent the development of gingival inflammation in the absence of mechanical plaque control.<sup>59</sup>

Chlorhexidine has been advocated for caries prevention and remineralization of early childhood caries in infants and young children and for controlling plaque in periodontal disease. Available in solution form and as a varnish, it is known to be both bacteriostatic and at high concentrations bactericidal against most oral bacteria.<sup>60</sup> However, efficacy on established biofilms is limited.

Fluoride has a significant caries-inhibiting effect in both the permanent and the primary dentitions. As discussed previously, not only does it affect the mineral phases of teeth and thus remineralisation, it also provides antibacterial activities against cariogenic bacteria, interfering with enzyme activity and reducing acid production by oral bacteria.<sup>61</sup> The effects of fluoride on oral bacteria are known to be many-fold.

While fluoride is present in most brands of toothpastes, it can also be delivered as a varnish, gel, foam and mouthwash. Although fluoride varnishes have a very high fluoride concentration, their use is safe due to a quick-setting base, slow release of fluoride over time and the comparatively small amounts of varnish applied by the clinician.

When considering the concentration of fluoride toothpastes for use by children there is a greater caries preventive

benefit from brushing with a toothpaste containing fluoride at a concentration of 1000 ppm or higher when compared to brushing with toothpaste containing 250 ppm fluoride.<sup>62</sup> There should be a balanced consideration between the benefits of topical fluorides in caries prevention and the risk of the development of fluorosis. It has been found that there is a significant reduction in the risk of fluorosis if children did not brush their teeth or have their teeth brushed with a fluoride containing toothpaste until after the age of 12 months. Finally, Triclosan is a broad-spectrum biocide incorporated into fluoridated toothpastes as a way to reduce supragingival plaque and gingivitis. It enhances the anticariogenic potential of fluoride in toothpastes.<sup>63</sup>

### Conclusion

The dental biofilm has been studied for many decades. It appears that preventing the transmission of *Streptococcus mutans* is likely to be inadequate to prevent dental caries if a carbohydrate-rich diet continues to be consumed. Similarly, restriction of sucrose intake, although welcome, would be unlikely to prevent caries, especially if frequent starch intake persists. These changes in the paradigms of dental caries aetiology have important implications for caries-control strategies. Instead, approaches to optimise fluoride delivery, to target plaque acidogenicity or acidogenic microbes, to promote oral hygiene, and to offer alternatives in the child's diet may be more promising.

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## Federal President's Report

*John Sheahan*

We remember.

It is impossible to have lived in Australia or New Zealand during April, 2015, and not been touched by the very moving remembrance services which took place right around our great countries in honour of the contribution and sacrifices made by all military and civilian personnel during times of conflict.

I emphasize “all” advisedly because it is worthy to note that the contribution and sacrifices of former adversaries was also acknowledged during each of these remembrance services. Indeed, often the governments of these adversaries were represented in the official parties and accorded the same respect as those of our nations’ allies.

I am particularly affected by two parts of the speech made by The Right Honourable John Key MP, Prime Minister of New Zealand, at the 2015 ANZAC Day Dawn Service at Gallipoli.

“And in those hills, Ottoman Turkish soldiers were already positioned and ready to defend this land. We New Zealanders rarely think of ourselves as anyone’s enemy, or as aggressors. But that’s exactly how those soldiers would have seen the Anzac and other Allied troops on April 25, 1915, and in the grinding months of fighting that followed. We have coastlines similar to this at home. If, for a moment, we imagine the situation reversed, we know that New Zealand soldiers would have been willing to lay down their lives to defend their country. So, of course, were the Ottoman Turks.”

This quote reminds me that Australians and New Zealanders have fought as aggressors in wars against other sovereign nations and not merely as defenders. While reflecting on this, I asked myself a series of questions. Can we really legitimately take a position on the moral high ground when we ourselves have acted as aggressors or supported an aggressor? Are there lessons to be learnt from the New Zealand Prime Minister’s comments that can be applied to today’s situation and to political debate in the future to avoid military conflict and the further rise of extremist groups? Do we need to “imagine the situation reversed”? For example, when Australia sent military forces to the Middle East as part of the “Coalition of the Willing” in the “War on Terror”, did this action reduce the threat of terrorism in the long-term or

did we only make it worse? Did we fail to “imagine the situation reversed”? Did we fail to imagine the response of Iraqi civilians to bombs being dropped on them and the “collateral damage” which affected their lives and the lives of their infants, children and adolescents? As a result of that failure, did the 2003 invasion of Iraq which occurred without a UN Mandate contribute to the rise of Islamic State? When Australia sent military forces to Iraq, was it trying to fight a symptom of the problem rather than the cause? Our dental education has taught us to focus on primarily treating the cause. In answering my own questions, I concluded that we need to “imagine the situation reversed” to be able to find the real cause of political problems and to work on fixing the causes, not the symptoms. It is this approach that seems to underpin the 1998 Good Friday Agreement which put an end to “The Troubles” in Northern Ireland. Perhaps we can learn from the lessons of its success and avoid future conflicts.

“To us, Gallipoli is also a byword for the best characteristics of Australians and New Zealanders, especially when they work side by side in the face of adversity.”

The Australian and New Zealand Society of Paediatric Dentistry (ANZSPD) was formed in 1988, by the amalgamation of two bodies: the Australian Society of Dentistry for Children, and the New Zealand Society of Dentistry for Children. Since then, Australians and New Zealanders have worked side by side to study and advance paediatric dentistry and to promote education in the field of paediatric dentistry. There is no doubt in my mind that the formation of the trans-Tasman body, ANZSPD, has had a beneficial effect for the infants, children and adolescents of Australia and New Zealand far beyond what could have been achieved had the two constituent societies of dentistry for children remained independent. Just as we have recently focused on remembering the significance of ANZAC Day, now let’s not forget to give our thanks to those far-sighted

individuals on both sides of the Tasman who proposed and worked side by side towards an amalgamation of two dental societies, and formed ANZSPD.

In this centennial year of the Gallipoli landing, I will have the honour of representing both the Australian and the New Zealand Members of ANZSPD at two important international meetings. By the time you read this report, I trust I will have returned from Seattle, USA and be about to leave for Glasgow, UK. The 2015 Annual Session of the American Academy of Pediatric Dentistry (AmAPD) is scheduled for 21st-24th May ([www.aapd.org/annual](http://www.aapd.org/annual)) and the 25th Congress of the International Association of Paediatric Dentistry (IAPD) is scheduled for 1st-4th July ([www.iapd2015.org](http://www.iapd2015.org)). I am attending both meetings in an official capacity as Federal President of ANZSPD. As such, at both meetings I will wear a single friendship pin featuring both the Australian National Flag and the New Zealand National Flag so that it is very clear to all that I am proudly representing both countries.

Those of us who have attended a Congress of IAPD in the past know well how few delegates from the USA register for the Congress unless it is held in the USA. I am almost certain that generally at IAPD Congresses the delegates from Australia and New Zealand far outnumber the delegates from the USA. This has made delegates from many other countries perceive that, collectively, our American professional colleagues are introspective. When I attended the last Congress of the IAPD, which was held in 2013 in Seoul, Korea, I became aware that, perhaps for the first time, the AmAPD had decided to make a concerted effort to engage with the wider international paediatric dental community. To this end, in April this year the AmAPD’s Board of Trustees sent me, as Federal President of ANZSPD, an invitation to attend its 2015 Annual Session as its guest. It is apparent that similar invitations have also been issued to the leaders of several other significant



paediatric dental representative groups around the world. I certainly welcome this engagement and trust that my attendance at the 2015 Annual Session will encourage the Members of the AmAPD to engage further with the broader international paediatric dental community. More importantly, I trust that this networking opportunity will lead to an increasingly strong relationship between ANZSPD and the AmAPD, and that a stronger relationship will be to our organizations' mutual benefit. Ultimately, I hope that it will lead to better outcomes for paediatric patients on both sides of the Pacific Ocean. Federal Council agreed with these sentiments and in response has decided to make a significant contribution towards the cost of my airfare, a contribution for which I am most grateful. At the next meeting of Federal Council, I will provide the Federal Councillors with feedback about the value of ANZSPD's investment in financially supporting my attendance.

The Council of the IAPD will meet before the Opening Ceremony of the 25th Congress. The Council consists of one voting Delegate representing each National Member Society. Each National Member Society also nominates an Alternate Delegate to attend the Council Meeting and who will only vote if the Delegate is absent. This will be the fourth IAPD Council Meeting that I have attended and it will be the third occasion on which I have had the privilege to be ANZSPD's Delegate. Dr Soni Stephen will attend the meeting for the second time as ANZSPD's Alternate Delegate. As a result, we have a very experienced team to represent the Society's interests at the 2015 meeting.

At the end of the IAPD Congress in Glasgow, Dr Eduardo Alcaino will be standing down as the Immediate Past President of ANZSPD. ANZSPD congratulates him upon the completion of his years of great service on the Board of IAPD and wishes him well for his soon to be quieter life. I think I am correct in saying that ANZSPD has been continuously represented on the Board

of IAPD for decades. On behalf of ANZSPD, I have nominated another of ANZSPD's Members to join the Board. I am hopeful this Member is successfully elected as a Representative of Nations so that the continuity remains unbroken.

I would like to offer ANZSPD's congratulations to the newly elected Executive of the Australasian Academy of Paediatric Dentistry (AAPD): Prof Bernadette Drummond, President; Dr Karen Kan, Vice President; Dr Mike Brosnan, Secretary; and Dr Daniel Ford, Treasurer. I know they will work hard to advance paediatric dentistry in Australia and New Zealand, and I wish them well in their endeavours during their term in office. I would also like to offer ANZSPD's thanks to the outgoing AAPD Executive. Over the last two years, AAPD and ANZSPD have shared a close working relationship and I trust that the links between our two organisations will only strengthen further with time.

As you may have noticed, the last issue of Synopses was the first to be edited by Dr Steve Kazoullis. I offer my thanks to Steve for taking on this responsibility, especially as he has also recently been elected Branch President in Queensland. At the same time, I would once again like to thank Dr Tim Johnston for his work as Editor of Synopses over the last few years.

By the time you read this, I have no doubt that Paediatric Dentistry will also have been well represented at the Australian Dental Association's Affiliates Meeting in Sydney. It is expected that I will have represented ANZSPD and Dr Karen Kan will have represented AAPD. As I will have to leave this meeting early to catch my flight to Seattle, I have asked the Australian Dental Association (ADA) to try to discuss any issues in which ANZSPD has a direct interest while I am still present. In my absence, should the need arise, Karen has agreed to represent the Society's views at this meeting. As the Immediate Past President of ANZSPD (Vic Branch), as a valuable contributor to submissions written on behalf of ANZSPD Inc, and

as ANZSPD's appointed delegate at the ADA Affiliates Meeting in 2013, I have no doubt that Karen is very familiar with ANZSPD's perspective on the wide range of political issues affecting ANZSPD's Australian Members. I also know she has the skills and integrity to clearly articulate the views of both organisations to the meeting if that is required, even if there is a discrepancy between those views. Naturally, I will have worked closely with Karen before the meeting to ensure that, wherever possible, ANZSPD and AAPD will be "singing from the same songbook" to maximise the benefits for the infants, children and adolescents of Australia (and, indirectly, New Zealand).

ANZSPD (SA Branch), under the leadership of Branch President, Dr Michael Malandris, is busy organizing the 18th Biennial Conference on behalf of ANZSPD Inc. This meeting is to be held 12th-15th November, 2015 in Adelaide, South Australia. It is likely to be ANZSPD's biggest ever Federal Scientific Meeting, with a 2½ day scientific programme and even some sessions running concurrently. The conference website ([www.anzspd2015.com.au](http://www.anzspd2015.com.au)) is constantly being updated with new information and I encourage you to consult it to see the latest additions. Prof Helen Rodd has accepted ANZSPD's invitation to be the meeting's Colgate Keynote Speaker. Helen is a wonderful lecturer whose research and practical clinical advice will make her a popular choice. Of course, she will be well-supported by invited speakers from both sides of the Tasman who will be lecturing on a broad range of dental and associated medical topics. There is something for everyone!

Finally, and once again I must thank all those who have contributed to ANZSPD's success. In particular, I would like to thank Dr Peter Gregory for his outstanding contribution as Federal Secretary Manager.

I look forward to seeing you all in Adelaide!

# 18th Biennial ANZSPD Congress Progress Report

Michael Malandris, Convenor, 18th Biennial ANZSPD Congress, Adelaide

Preparations are well under way in Adelaide for the main event of the 2015 ANZSPD Calendar. Our local organising committee are continuing to work very hard at putting together an unmissable programme for all of you. We're really excited about hosting the Biennial in spring from November 12th-15th at the Adelaide Convention Centre, the premier conference facility in Adelaide overlooking the River Torrens, the Festival Centre and the newly refurbished Adelaide Oval. The last time I recall a spring congress was when Sydney hosted IAPD in late October 2005.

Our scientific programme is now advertised on our website ([www.anzspd2015.com.au](http://www.anzspd2015.com.au)) and runs for two-and-a-half days from Friday 13th-Sunday 15th November, with 16 CPD hours on offer. On Friday there are even concurrent sessions on offer following from the morning's plenary lecture to provide you with even more choice. Many of our speakers are world renowned and are regular keynote speakers at conferences.

Professor Helen Rodd from the University of Sheffield will be speaking on the psychosocial impact of dentistry on the child: what children think of us as their dental care provider and how do children deal with traumatic dental injuries. She will also provide a plenary lecture on pulp therapy in primary teeth and asks the question "Are you still doing what you did 10 years ago?" as well as update us on the latest challenges in restoring primary teeth.

Professor David Manton will discuss the partnership between paediatric dentistry and orthodontics, provide the latest information on management of MIH and caries prevention and discuss the role of genetics in mainstream paediatric dentistry.

Professor Bernadette Drummond will talk about her personal experiences and expertise in child behaviour management and offer further insights into hypomineralised molars and caries management of children.

There are many other excellent presentations to be given including post-trauma response management from University of Adelaide Endodontics Professor Geoffrey Heithersay, the burden of truth in orthodontics from University of Western Australia Professor Mithran Goonewardene, the role of anaesthesia and hypnosis by prominent Adelaide

anaesthetists Dr David Sainsbury and Dr Allan Cyna respectively, the holistic, multi-disciplinary approach to a child with special needs (Adelaide paediatrician Dr Anthony Chitti) and autism (Adelaide psychologist Angela Coppi), the team based approach to orthodontics and paediatric dentistry will incorporate the crucial role of the hygienist (Sophie Karanicolas) and oral health therapist (Cathy Snelling) and Associate Professor Chris Barnett will be demystifying genetics for dentists.

The other major event of the scientific programme is the Colgate Postgraduate Research Competition on Saturday 14th November.

Of course no Biennial would be complete without a great social programme and the good times start straight away with the Welcome Reception on Thursday evening 12th November. Travellers from interstate and overseas should have time to settle in before the informal reception begins, which will be held at the Adelaide Convention Centre. A host of options will be available for you on the Friday evening after a full scientific programme. Keep Saturday evening free though for the Gala Dinner which will be the major social function of the congress.

There is a large exhibition also taking shape with many companies already involved. Colgate remains our generous principal sponsor.

Online registration will be open by late May with earlybird registration available.

For those of you thinking about bringing along your families, Adelaide in November is the ideal time and place for them to get out and about. Adelaide gets some great weather this time of the year (ave. max. temp. 25C) and the city is building up to the summer of festivals ahead. In fact, one of the biggest family events of the year will take place on the morning of Saturday 14th November with the Credit Union Christmas Pageant attracting crowds of well over 300,000. A highlight for so many children of all ages! If you're thinking of extending your stay in Adelaide, there are a huge range of experiences waiting to be discovered.

On behalf of the 18th Biennial ANZSPD Congress Organising Committee, I look forward to meeting with many of you and sharing our beautiful city with you, your staff and your families.

## THE GREAT WHITE BITE

### TACKLING THE FUTURE OF PAEDIATRIC DENTISTRY



**ANZSPD 2015**  
18th Biennial Congress  
ADELAIDE CONVENTION CENTRE  
**12 - 15 November 2015**



PRINCIPAL SPONSOR  
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The programme is a diverse mix of renowned speakers from around the world brought together to create three days of collaboration and learning in all aspects of paediatric dentistry. A great social programme will be on offer for you to network with colleagues and friends.

#### TOPICS INCLUDE:

- Psychology and paediatric dentistry
- Molar incisor hypomineralisation
- Dental trauma
- Orthodontics
- Genetics
- Caries prevention
- Restorative options in paediatric dentistry
- Sedation for children
- Special needs children
- Pulp therapy
- And the overall team approach to success in paediatric dentistry.

#### INVITED SPEAKERS INCLUDE:

- Professor Helen Rodd
- Professor Bernadette Drummond
- Professor David Manton
- Professor Geoffrey Heithersay
- Associate Professor Mithran Goonewardene
- Associate Professor Chris Barnett and many more

We look forward to you joining us in Adelaide.

Further details:

**[www.anzspd2015.com.au](http://www.anzspd2015.com.au)**





Dr Roger Hall



LtoR: Dr Mala Desai,  
Dr Vanessa William and  
Dr Yaso Ramadas



Prof David Manton is outflanked by  
the entertainment



LtoR: Dr Soni Stephen, Dr Naveen Loganathan, Dr John Sheahan, Federal  
President and Dr Peter Gregory, Federal Secretary Manager



LtoR: Dr Jane Lee, Dr Amy Fung, Dr Evelyn Young, Dr Karen Kan,  
Dr Fiona Ng and Dr Selina Chan share the limelight



Mrs Helen Devlin and Mr Richard Devlin





Dr Roger Hall and  
Dr Evelyn Yeung



Prof Svante Twetman, one of the  
Colgate Keynote Speakers



LtoR: Dr Michael Malandris, SA Branch  
President, Dr Charmaine Hall and  
Dr Erin Mahoney, NZ Federal Councillor



LtoR: Dr Sue Cartwright, Scientific Affairs Manager,  
Colgate Oral Care, Dr Giselle D'Mello and Dr Nina Vasan



Dr Joe Verco was tied up  
during the Gala Dinner

*If they had this much fun at the **2014 RK Hall Lecture Series** imagine how much you will enjoy ANZSPD's 18th Biennial Conference in Adelaide, November this year!*

# There is an emerging trend on the use of probiotics and organic diets. Discuss the effects of these supplements and diets on the oral environment of a child.

Louise Brearley Messer ANZSPD Undergraduate Essay Competition, 2014

Kenneth KOH Shou Bin

## 1. Introduction

As clinicians we have a responsibility to be aware of changing factors in the lifestyle and environment of our patient that could influence their general and oral health. Probiotics are “live microorganisms that, when administered in adequate amounts, confer a health benefit to the host”<sup>1</sup>. They are claimed either to restore the natural microflora, or interfere with pathologic organisms. Organic food is edible substances that have been produced through growing crops and raising livestock that avoid synthetic chemicals, hormones, antibiotic agents, genetic engineering, and irradiation<sup>2</sup>. These supplements and diets are becoming increasingly important issues, because there is increased usage – both by adults and children. Children will inevitably be affected when their parents opt for such diets for the family. In this essay, the important implications of such supplements and diets on the oral environment of a child will be explored.

## 2. Probiotics

Antibiotics are widely and regularly used to prevent and treat infections caused by endogenous and exogenous microbes, and their availability and low cost have revolutionised treatment of infectious diseases and reduced death rates<sup>3</sup>. The increase in the development of resistance to many antibiotics has increased the development of alternative antimicrobial approaches. Currently, the growing use of ‘health-promoting bacteria’ is one of the strongest emerging fields. The widespread intake of probiotics as a prophylactic and therapeutic product for gastrointestinal health has made it an important topic for oral healthcare workers. The key mechanism behind introducing probiotics is to use them to compete with other microorganisms that are deleterious to health<sup>4</sup>. By increasing the body’s flora of specific non-pathogenic organisms, it is hoped that the pathogenic organisms can be replaced. The overall intended

effect is to modify the relationship with our immediate microbial environment in ways that may benefit general health<sup>5</sup>.

### 2.1 Research in Probiotics

The research in probiotics has focussed on Lactobacilli and Bifidobacteria<sup>6</sup>. As a result of their role in the development of caries, lactobacilli have been of great interest to dental researchers for several decades. They are associated more with carious dentine and the progress of caries rather than with the initiation of the dental caries process<sup>6</sup>. Lactobacilli are the most common probiotic bacteria associated with the human gastrointestinal tract; therefore they may also play an important role in the eco physiology of oral microbiota. There are various lactobacilli species that were demonstrated to inhabit healthy mouths, although there was no species that was specific to health<sup>7</sup>.

### 2.2 Use of Probiotics

Probiotics may act in two main ways: directly, to interact with the dental plaque and interfere with biofilm formation, plaque ecology and to compete with oral microbes for the available substrate and production of antimicrobial substances; or Indirectly, through modulation of systemic immune function, local immunity and regulation of mucosa permeability<sup>8</sup>.

### 2.3 Administration of Probiotics

#### *Introduction into the oral cavity*

Probiotics are usually provided either as a culture concentrate added to a beverage or food (such as fruit juice), or inoculated into a milk-based food (dairy products such as milk, milk drink, yoghurt) among others<sup>6</sup>. Another novel method of introducing probiotics into the oral cavity is through the daily chewing of gum containing probiotic bacteria, which reduces the levels of salivary mutans streptococci as well<sup>9</sup>. Milk and other dairy products contain calcium, where the complex fluid of organic and inorganic compounds seems to be enamel protective. Milk also has cariostatic

properties when ingested at the same time as a cariogenic challenge possibly because of the calcium lactate content, which has been shown to be anticariogenic<sup>10</sup>.

Curd, a common dietary constituent of the Indian population, was tested by Sudhir et al because it is readily available, inexpensive, and acceptable to the paediatric age group<sup>8</sup>. Unlike dairy, curd is a semisolid, and may be retained in the oral cavity for a longer period of time. This has important implications in the duration of action and colonisation ability of the probiotic used in the mouth.

Another novel method of probiotic delivery is through ice cream. Singh et al<sup>11</sup> investigated *mutans streptococci* and *lactobacilli* levels in young children consuming ice cream containing *Lactobacillus acidophilus* and *Bifidobacterium lactis* over ten days, and found that *mutans streptococci* levels were decreased. Ideally, important factors in probiotics, especially those targeted at children, should be well liked, and have the potential to colonise for a substantial period.

#### *Adherence and Colonisation*

To be able to continually exert its probiotic effects in the mouth, a bacterium should be able to adhere to oral surfaces and become part of the biofilm. It has been shown by Yli-Knuuttila et al<sup>12</sup> that *Lactobacillus Rhamnosus* GG is not able to colonise the oral cavity when administered in a juice form. In their study, only 3.6% of subjects still harboured bacteria in the oral cavity after 7 days, thus permanent colonisation of *Lactobacillus rhamnosus* GG in the mouth by this method is improbable. This contradicts the pilot study<sup>13</sup>, and the authors attribute this to inadequate methods of analyses by the early 1990s when selective MRS agar plates had not been used and the polymerase chain reaction primers for *Lactobacillus rhamnosus* GG of this study were not available. In another study by Busscher et al<sup>14</sup>, it was found that even after following a 1 week



consumption of bio-yoghurt containing *L. acidophilus* and *L. casei*, young subjects with originally no *lactobacilli* in their salivary and interproximal plaque samples continued to be free of *lactobacilli*. It was thus concluded that *lactobacilli* cannot be installed by the consumption of bio-yoghurts containing active *lactobacilli*. It can therefore be assumed that it is still questionable if probiotics can colonize in the mouth. Regular consumption of probiotics in the form of dairy products may decrease the numbers of salivary mutans streptococci and *lactobacilli*. However, there is no current evidence of any longer term residual colonisation after discontinuation.

## 2.4 Effects on the Oral Environment of a Child

### a. Caries

In multiple studies<sup>13, 15, 9, 16</sup>, and a long-term study on children<sup>10</sup>, it has been shown that the consumption of probiotics reduces caries risk by reducing the amount of *mutans streptococci*. One of the possible reasons for this could be that *Lactobacillus rhamnosus GG* does not ferment sucrose<sup>13</sup>, or that it inhibits growth of other bacteria like streptococci by producing a low molecular weight substance that closely resembled a microcin<sup>17</sup>. In the same study, *Lactobacillus rhamnosus GG* has been found to inhibit the growth of *Streptococcus sobrinus* *in vitro*, restricted to a low pH range. Bifidobacteria in yoghurt have also been found to reduce the levels of selected caries-associated microorganisms (*mutans streptococci* and *lactobacilli*) in saliva<sup>15</sup>. Nase et al<sup>10</sup> found that *Lactobacillus rhamnosus GG* also competes with other oral microorganisms by producing antimicrobial substances such as pyroglutamic acid. However, these are but proposals at this stage, and the direct mechanisms of probiotic action are still not fully understood. Currently, any clinical recommendations would still be premature, and large-scale clinical studies are necessary for confirmation. Probiotics as a form of “bacteriotherapy” at this stage should still only be used as an adjunct to existing evidence-based methods of preventing and controlling caries in children<sup>18</sup>.

### b. Fungal infection – *Candida albicans*

In a study by Hatakka et al<sup>19</sup>, it was shown that cheese containing probiotic bacteria (*Lactobacillus rhamnosus GG*) was able to reduce the risk of high yeast counts by 75% in 276 elderly people. This complements another study by Ahola et

al<sup>20</sup> where probiotic cheese containing two strains of *Lactobacillus rhamnosus GG* reduced the level of salivary yeasts in healthy adults. Oral supplementation of *Lactobacillus rhamnosus GG* also reduced gastrointestinal colonization of *Candida* in pre-term neonates. Furthermore, it was also found in the same study that probiotic treatment reduced the prevalence of hyposalivation and a subjective feeling of dry mouth. It was interesting to note, however, that this phenomenon cannot be explained by chewing cheese, and the reason is thus unknown. This is significant in the treatment of children because it is possible that earlier treatment with the *Lactobacillus rhamnosus GG* might reduce the incidence of candida when they reach that age group, although more definitive studies are necessary to confirm this.

### c. Orthodontic Treatment

A particular group of interest that has been tested with probiotics would be those who are undergoing orthodontic treatment with removable and fixed appliances. When fed daily with a subspecies of *Bifidobacterium animalis*, it was seen that salivary levels of mutans streptococci were reduced<sup>21</sup>. While reduced however, more research would be needed to confirm if this is indeed a viable alternative for the prevention of dental caries during dental treatment, especially since *lactobacillus* counts were not taken into consideration in this study.

## 2.5 Conclusion on Probiotics

Considering a net benefit effect from the consumption of probiotics, the results are still inconclusive. Some of the aforementioned studies have demonstrated a generalised decrease in mutans streptococci counts in all of the test subjects, although it is still unknown if the overall decrease in mutans streptococci could be due to a bactericidal effect of the medium on mutans streptococci or other mechanisms at play.

However, when *lactobacilli* were administered in a form that avoided contact with the oral cavity (liquid and capsule), it was discovered that the oral administration of probiotics significantly increases salivary counts of *lactobacilli*<sup>22</sup>. This study indicates the need to closely monitor the dental health of patients undergoing long-term probiotics treatment, even when administered in a form that avoids direct contact with the oral cavity. Probiotics as a form of therapy seems to be a new alternative that aids in maintenance of good oral health,

and gives a new research field in which we can proceed. It should be noted that a large amount of study in probiotics was performed with subjects in their late teens to adulthood, and quite a number done on children. The oral flora varies with age depending on oral hygiene regime, dentition and surface area, diet, and habits like smoking and drinking. As such, it should be understood that as the current evidence is still very limited, probiotics in children should definitely be used with caution, and under close supervision of their dentists so that any changes in the oral health of the child can be noticed and problems rectified as soon as possible.

## 3. Organic Diets

The media and advertising agencies have played a significant role in promoting organic food as safer and more nutritious. This has led to the growth of demand for organic food. The Sydney Morning Herald has published articles reporting that demand in the Australian organic market is increasing, as consumers look for more natural alternatives<sup>23</sup>. Australia houses 2986 certified organic operators, representing 1.6 per cent of total farming operations<sup>23</sup>. This increase in production can also be attributed to consumers' perception of organic produce. However, verification of any health claims associated with organic food is complicated by the lack of an adequate system to experimentally test those claims<sup>24</sup>.

### 3.1 Research on Organic Diets

In a study comparing organic to conventional diets, Chhabra et al<sup>24</sup> evaluated the difference between fruit flies, *Drosophila melanogaster*, fed organic versus conventional diets. They found that in the flies consuming organic food, longevity, fertility and oxidative stress resistance were improved in comparison to the flies that consumed conventional diets. A limitation of this study is that the organic and conventional produce was not matched for soil condition, latitude of growth etc. Notwithstanding, this test would resemble what consumers tend to encounter in a store, where organic and conventional produce grown in different environments co-exist. Nonetheless, irrespective of the predominant macronutrient or individual growth condition, the findings for the study appear to suggest that organic foods provide improved health outcomes, even though the reason for this is not clear at this point in time. Specific mineral, vitamin, and nutrient content that considered



it to be more “beneficial” to the flies were not mentioned, especially calcium, phosphorus, and fluoride, which are vital elements relating to tooth development.

### 3.2 Nutrients in Organic Diets

In a systematic review of 17 studies in humans and 223 studies of nutrient and contaminant levels in foods, the results showed that the current published literature lacks strong evidence that organic foods are significantly more nutritious than conventional foods, and are thus not necessarily superior<sup>25</sup>. As expected, consumption of organic foods reduces exposure to pesticides and antibiotic-resistant bacteria. The former is because of the nature in which organic food is grown, while the latter is possibly due to the routine use of antibiotics in conventional animal husbandry, even though this is currently still a contentious topic since it is known that inappropriate use of antibiotics in humans remains the major cause of antibiotic-resistant infections.

### 3.3 Effects of Organic Diets on the Oral Environment of a child

There are currently two studies<sup>26,27</sup> on the effects of exposure to organophosphorus pesticide in relation to children consuming organic and conventional diets, especially if their diets regularly consist of fresh fruits and vegetables, fruit juices, and wheat-containing items. Assuming that the organophosphorus came from diet alone, a conclusion was made that consumption of an organic diet provides a significant decrease in exposure to organophosphorus pesticides commonly associated with conventional farming methods. Because of this decrease in organophosphorus pesticide levels systemically, it is thought that these children would also have a lower probability of neurologic health risks, which is a common toxic mechanism of organophosphorus pesticides. At this stage however, more research still needs to be done on the pharmacokinetics of the metabolites of organophosphorus in humans, and the adverse health effects in relation to the oral cavity.

Smith-Spangler et al<sup>25</sup> found that there are two chemicals that are significantly higher in organic than conventional produce: phosphorus, and phenols. This is consistent with two other studies<sup>28,29</sup>. Both calcium and phosphorus are important nutrients required for the development of bones and teeth. However, it has been shown that enamel and dentin development is disturbed under a high phosphorus diet and unbalanced calcium

to phosphorus ratio<sup>30</sup>. The disturbed mineral metabolism resulted in enamel depigmentation, enamel hypoplasia, enamel pitting and altered dentin morphology in rodents<sup>30</sup>. Therefore, assuming that organic diets do carry higher dietary phosphorus content, care should be made to avoid overconsumption, especially in children between the ages of 0-10 years, when the aesthetically important permanent dentition is undergoing calcification. As this is the only study found to date, further studies are required to determine the specific effects of high phosphorus diet and altered calcium to phosphorus ratio on tooth formation, to give a better understanding of the overall effect of phosphorus on mineralized tooth tissues such as dentin and enamel.

### 3.4 Discussion on Organic Diets

Due to the current shortage of scientific evidence available, it may be reasonable to mention some clinical concerns. It has been suggested by some experienced paediatric dentists that children whose parents adhere strictly to organic diets may also have other health behaviours tending towards ‘natural therapy’. Thus, the children may have an increased risk of developing caries, because the parents may not believe in using fluoride, or believe that all things natural, including fruit juice, are healthy despite the high qualitative acidity and sugar content. It is our duty as oral health practitioners to keep up to date with the current evidence available so as to be best equipped to educate these patients that these natural therapies are not alternatives to achieving good oral health.

Moreover, there may be difficulties in persuading parents with deeply held beliefs. In this context, there has been research into communication neuroscience such as that which is being carried out at the University of Pennsylvania<sup>31</sup>. It gives insights into how best the health message can be phrased and communicated to have an increased possibility of acceptance. This emerging field of Communication Neuroscience seeks to understand how messages from healthcare practitioners can best be expressed to our patients, through linking underlying neurocognitive mechanisms to observable outcomes. This study illustrates one benefit of combining the tools of neuroscience with more familiar methods in health psychology.

### 3.5 Conclusions on Organic Diets

There is currently no strong evidence for the direct effects of the organic diet on the oral environment of a child. There is also much controversy regarding the general health benefits of having an organic diet. With the emerging trend of possible relationships between organic diets and general health, paediatric oral health practitioners would certainly benefit from further study in this area, so as to be given a greater awareness of possible effects on the oral cavity of a growing child.

## 4. Overall Conclusion

While the effects of probiotics are currently still unclear, the results seem to show promise in the reduction of carious lesions in children. Some studies have shown a reduction in mutans streptococci in test subjects, although it is not clear whether this decrease is due to the bactericidal activity or other mechanisms. Furthermore, there were fewer reports on the levels of lactobacilli present pre and post treatment. These are interesting implications for children with a high risk of caries.

In the case of organic food, it is known that an imbalance in the calcium-to-phosphorus ratio affects dental development, although we do not know how significant it has to be before it actually occurs. More research is also needed to ascertain whether or not the increased phenol content is significant. There are also behavioural ramifications on the dentist-parent-child relationship, depending on the willingness of parents to accept the dentist's advice.

In conclusion, it can be observed that the increased interest in the use of both probiotics and organic diets are significant to all oral healthcare practitioners involved in treating children so as to be able to provide and give the best care and advice necessary in improving and maintaining optimal oral health and hygiene in the growing child.

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## New Zealand Branch Report

Alison Meldrum

### Grace with her honorary membership

This is my opportunity to acknowledge the behind the scenes input of the NZ ANZSP committee and its membership. In particular it is a chance to recognise Heather as our past president, Craig as secretary treasurer and Wanda as membership secretary for their valuable and unselfish contributions.

The branch held another successful study in November 2014 at the regular venue Mac's Brewery in Wellington. This day allows for social and intellectual interaction with colleagues who share the vision of NZASP "...committed to the study and advancement of paediatric dentistry, and the promotion of education in the field of paediatric dentistry." (<http://anzspd.org.au/en/mission-and-vision>).

The programme was varied, exciting and informative, with presentations from Melanie Woodham a practicing clinical psychologist, Mike Bronsan on dental genetic defects and Vivienne Levy on pediatric forensic dentistry.

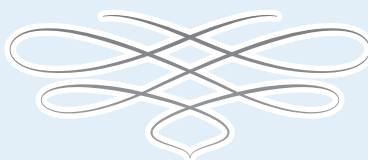
On Erin's recommendation, and under her management, the NZ Branch has had Dr Grace Suckling's extensive and valuable slide collection preserved as a digital resource. Dr Grace Suckling is an honorary member of the New Zealand branch and a special patron of the D3G (Developmental Dental Defects group). She was described by D3G co-director Mike Hubbard as the "doyen of the DDE era". Grace has kindly acceded to our request to write a brief biography of her work in dental research.

*"I started at Dental School in Dundee, Scotland the day after the second world war was declared in Sept 1939 and spent the day filling sandbags. I worked in the School Dental Service and in a busy general practice in England before sitting for the FDSRCS. This resulted in being on the staff at the London Hospital Dental School where I ended up teaching Dentistry for Children, then just emerging as a separate subject in the UK. I came to NZ in 1956 and joined the Dental Research Unit, Medical Research Council in 1968.*

*I first became interested in Enamel Defects in a shearing shed in Northland when selecting sheep for a trial. Several had marked hypoplasia and I needed to find out why. I later became involved in defects in children. I became aware of the lack of a suitable terminology and how little was known about defects, apart from fluorosis. I combined the two by producing defects in sheep teeth similar to those seen in children. My research findings resulted in the degree of Doctor of Dental Science presented in 1996 by the University of Otago. I have always maintained my interest in defects although I no longer keep up with the literature.*

*I have enjoyed looking again at my historical slides and thank you for making it possible to get them updated. I wish the Society continued success.*

Thank you Grace for sharing that with us. It is reflections such as yours which inspire succeeding generations of clinicians and researchers. It is by continuing to offer such inspiration and mutual encouragement that this society will best fulfil its mission and vision statement.





## New South Wales Branch Report

*Michele Tjeuw*

In 2015, ANZSPD NSW Branch has continued to work together to promote continuing education and professional development.

Congratulations to the Federal Committee for their work on development of the website which not only provides an invaluable portal for current information, but an avenue to register for upcoming events, correspond with leaders in the profession and access educational resources.

Thank you Dr John Winters, for your tireless work in developing this digital scaffolding. We value the hours you have spent sorting out teething problems associated with website maintenance and thank you for your support in developing the NSW Branch webpage.

Societies rely on the enthusiasm of their members and we thank our dental therapists, general and specialist dentists for their continued support of the ANZSPD NSW. We hope that you have not only learnt from the formal presentations, but also learnt from each others conversations and experiences.

Due to the closure of the Vibe hotel, we have had to change venues this year. Following the input from our survey, and after much consideration regarding the logistics of member location, transport accessibility, minimum numbers, room facilities and cost effectiveness, we have chosen The Courtyard Marriott Hotel in North Ryde as our meeting venue. We hope you found the new venue convenient and comfortable.

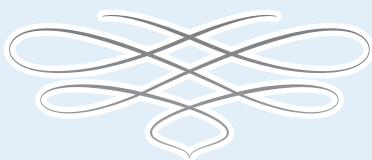
Our Scientific Program for 2015 started with a topical presentation from Dr Mala Desai on "Zirconia Crowns in Children." Dr Desai's ability to provide an cosmetic alternative to stainless steel crowns was well received by patients, parents and dentists! Thank you for your energetic and informative presentation.

We look forward to our next presentation where Dr Eduardo Alcaino will be presenting on "Are you happy with your happy gas? What's new and clinical tips."

In October, we welcome Dr Robert Prashanth Anthonappa who will be presenting on "Decay in Pulp Therapy Studies." We welcome Dr Anthonappa to NSW and look forward to his presentation.

This will also be our AGM where we will be nominating new office bearers.

Special thanks to Dr Chinh Nguyen for his leadership, Dr Soni Stephen for his insight in Federal issues and Dr Naveen Loganathan for his financial wizardry! Also, thank you to the committee members, Drs Ronny Marks, Mary Moss and Diane Tay for helping me round up the crowds before each dinner meeting. Your continued support of the society is priceless.



## Queensland Branch Report

*Greg Ooi*  
*Secretary/Treasurer*

The Queensland branch had another successful year in 2014. Throughout the year, dinner meetings have been increasingly well attended with a varied and stimulating range of guest speakers. Our venue the Era bistro in South Brisbane, has sadly been forced to close it's doors, having finally succumbed to the hardships of the 2011 floods and recently the loss of business from the G20 CBD closure. The hunt is on for a suitable venue of comparable calibre. We wish the staff of the Era bistro all the best, and thank them for their past excellent service.

A new committee was elected at our recent AGM. We welcome our new President Dr Steve Kazoullis and thank outgoing President Dr P Y Lai for his efforts during his two recent terms. Our new Secretary /Treasurer is now Dr Greg Ooi, Federal Rep Dr Sue Taji and committee members Drs PY Lai, V Linette and M Kenwood.

This year will see the continuation of our dinner meetings, as well as a clinic day later in the year, open to all practitioners with an interest in dentistry for children. The day promises to be an informative and sociable gathering.

Forward plans will also begin for the 2016 ANZSPD Federal Conference to be hosted in Queensland which will be a source of excitement for those involved!

Our membership appears somewhat down at present perhaps with the unfamiliarity of the new online membership renewal. A push to actively increase membership numbers will be implemented to continue the revival in our local branch seen over the past few years.

I wish to thank our past and present President and committee members for their work and support throughout the year and in the year to come.



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## Welcome to the Website

Dental professionals caring for children's oral health

Welcome to the new website of the Australian and New Zealand Society of Paediatric Dentistry (ANZSPD). The Society is justly proud of it.

ANZSPD is already Australasia's principal and most respected supplier of continuing professional development courses in Paediatric Dentistry. In time, I trust this website will become Australasia's premier paediatric dental resource for parents, dental practitioners and members alike. Please take the time to make yourself familiar with it because it is already packed with news and information to help keep you up to date on the world of Paediatric Dentistry.

This website will be far more dynamic than ANZSPD's previous website, so it is important to return to it time and time again to keep abreast of the latest in paediatric dental advice, where to find a member and upcoming continuing education courses in Paediatric Dentistry, both in your local area and further afield. ANZSPD has always been keen to improve its service to the profession and the broader community. To this end, ANZSPD would welcome your feedback about the website or any of ANZSPD's other activities.

On behalf of ANZSPD, I would like to thank Dr John Winters who has worked tirelessly to facilitate the development of the new website and all the members who have contributed in any way to the available content.

So now it's time to explore what we have on offer!

With kind regards,

**Dr John M Sheahan**  
Federal President  
ANZSPD Inc.



### Events

**Dentistry for the Adoles...**  
Friday, 7 November 2014

**RACDS 2014 Joint Collegi...**  
Sunday, 7 December 2014

**ADA 36th Australian Dent...**  
Wednesday, 25 March 2015

**EAPD 9th European Academ...**  
Friday, 8 May 2015

**AmAPD 2015 Annual Meetin...**  
Thursday, 21 May 2015

**IAPD 2015 The Voice of t...**  
Wednesday, 1 July 2015

**NZDA Conference 2015**  
Wednesday, 19 August 2015

**AAPD 25th Anniversary Me...**  
Wednesday, 11 November 2015

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Monday, 22 September 2014

**Welcome to the Website**  
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by Sue Cartwright,  
BDS, Dip Clin Dent, M Ed

## Alliance for a Cavity Free Future Community Grants

The Alliance for a Cavity-Free Future (ACFF) is a worldwide group of experts who have joined together to promote integrated clinical and public health action in order to stop caries initiation and progression for all age groups.

As part of this global collaborative action Colgate Palmolive is proudly supporting ACFF Community Grants in Australia and New Zealand. A total of \$50,000 has been granted to the 2015 recipients to undertake projects that aim to stop caries now and into the future.

The ACFF grant recipients and projects for 2015 are;

- 1) **Dr Haiping Tan** from Adelaide University with “Building a caries free community for the elderly”
- 2) **Prof Helen Skouteris and Dr Merrilyn Hooley** from Deakin University with “Dental caries prevention and treatment for children in out of home care”
- 3) **Ms Susanne Sofronoff and Dr Andrea de Silva** from Dental Health Services Victoria with “Developing a toolkit to integrate tooth- brushing into school breakfast programs”
- 4) **Dr Melanie Hayes** from Melbourne University with “Dietary analysis and nutritional counselling for caries prevention in community dental practice”

Congratulations to these winners. We wish them all the best with their projects.



Applications for the 2016 ACFF  
Community Grants will open in  
October.

If you would like more information  
about these please visit

**ACFF.org/Australian Chapter**

or send an email to

**Susan\_Cartwright@colpal.com**



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[www.allianceforacavityfreefuture.org](http://www.allianceforacavityfreefuture.org)

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# Up Coming *Events*

1-4 July 2015

## IAPD International Congress

"The Voice of the Child"

Scottish Exhibition and

Conference Centre

Glasgow, UK

[www.iapdworld.org](http://www.iapdworld.org)

[www.iapd2015.org](http://www.iapd2015.org)

24-25 July 2015

## ANZSPD WA Mid-Winter Meeting

Pullman Bunker Bay Resort, Margaret

River Region

Naturalist, WA

[anzspdwa@gmail.com](mailto:anzspdwa@gmail.com)

19-22 August 2015

## New Zealand Dental Association Conference

Auckland, New Zealand

[www.nzda.org.nz](http://www.nzda.org.nz)

12-15 November 2015

## ANZSPD 18th Biennial Convention

Adelaide Convention Centre

Adelaide, SA

[www.anzspd2015.com.au](http://www.anzspd2015.com.au)

26-28 May 2016

## Paediatric Dentistry Association of Asia

### 10th Biennial Conference

Tokyo Dome Hotel

Tokyo, Japan

[www.pdaa2016.asia](http://www.pdaa2016.asia)

11-13 August 2016

## 19th World Congress on Dental Traumatology

Brisbane Convention and Exhibition Centre

Brisbane, Australia

[www.wcdt2016.com](http://www.wcdt2016.com)

4-7 October 2017

## 26th IAPD International Congress

Santiago, Chile

[www.iapd2017.com](http://www.iapd2017.com)

## Australia and New Zealand Society of Paediatric Dentistry [www.anzspd.org.au](http://www.anzspd.org.au)

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